PREVENTION OF VENTILATOR ASSOCIATED PNEUMONIA: WHERE ARE WE NOW?

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Introduction: Hospital acquired pneumonia remains an important cause of morbidity and mortality in our intensive care units (ICU), despite advances in antimicrobial therapy, better support care modalities and the use of a wide-range of preventive measures. This statement, published some years ago, still has a strong support in the reality of our days. Ventilator-associated pneumonia (VAP) affects almost one third of all intubated and ventilated patients. The cumulative risk is 1% for each day of mechanical ventilation. Its impact on ICU cost is significant. The length of stay in ICU increases by 4–7 days in case of VAP and the cost of care increases by more than $7,000 per patient. Any ventilated patient can develop VAP during his stay in ICU, but there are some risk factors, which may increase the percentage of VAP: admission from a chronic care environment, current hemodialysis, immunocompromised host, prior use of antibiotics.

Pathophysiology: The main causative factor of VAP is aspiration of supraglottic secretions into the lung parenchyma. The explanation for VAP development is based on the simple fact that tracheal intubation and mechanical ventilation impair the natural defense mechanisms, which are supposed to prevent aspiration of the supravocal cords secretions: the cough reflex and mucocilliary clearance. Beside, injury of tracheal epithelial cells and decrease of bacterial adherence to tracheal epithelial cells must be added to the list of impaired defense factors affected by prolonged tracheal intubation and mechanical ventilation.

Diagnosis: The data from literature are controversial. Some authors would use a simple list of diagnostic criteria: leukocytosis, fever, purulent sputum, radiological infiltrates and absence of any other evident infection focus. But some others would add a positive culture either from a tracheal aspirate or even from bronchoalveolar lavage (BAL). This is the explanation on the fact that some ICUs report a much lower incidence of VAP than that mentioned in most of the pertinent papers. In the last years, there is an evident trend to artificially lower the incidence of VAP in the USA, since the Medicare payment does not cover ''preventable'' complications! But the main problem of VAP is that as per today, there is no proved method of prevention!

Proposed Methods of VAP Prevention: A large list of methods for preventing VAP can be found in the recent literature. Most of them proved to be ineffective: use of sucralfate, oscillating beds, digestive decontamination, frequent change of ventilator circuits or aerosolized antibiotics. In the last couple of years some clinical studies used what is called ''a VAP bundle policy'' which would include : head of bed elevation, interruption of sedation on a daily basis, oral suction before each change of position, patient early mobilization. The results are encouraging but not clear cut, some data showing almost no change in VAP incidence when using ''VAP bundle'' prevention protocol.

Conclusions: VAP is still a serious complication of mechanical ventilation and tracheal intubation. The 100,000 Lives Campaign of the Institute of Health Care in the USA promotes six evidence-based safety interventions which can significantly improve acute care outcome, among them prevention of VAP.

But the lack of an uniform list of criteria for VAP diagnosis and of a reliable method to prevent it keep VAP item on the top of the problematic aspects of ICU care. The ''drive for zero'' tendency in some countries regarding VAP might do patients more harm than good. This is why it becomes evident that a search for a reliable method of VAP prevention is perfectly justified and absolutely needed.